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vibrations in the air: and he thinks, that it is as easy to conceive how the velocities of the particles of light may be different, and yet take up equal times in propagating their motion from one to another through a given space, as to explain how sounds of different tones move with equal velocities. In accounting for both, he shews, that, in a series of particles, which mutually repel each other, the greater their velocity, the nearer they will approach other, in communicating their motions from one to another; and consequently each of them must move thro' a greater space in so doing: wherefore the same time may be spent in propagating a successive motion thro' a series of particles, whose velocity is greater, if each particle has to move thro' a greater space, as is spent, where the velocity of each particle is less, but is continued thro' a less space. The dilemma, to which our author's reasoning seems to have reduced the doctrine of refrangibility, may therefore be consider'd as a probable argument for adopting this hypothesis of the propagation of light thro' an elastic medium.

XXXIX. *The Case of the Operation for the Empyema, successfully performed by Joseph Warner, F. R. S. and Surgeon to Guy's Hospital.*

Read June 28, 1753. ON the 19 of March 1752, I did myself the honour of communicating to the Royal Society the case of John Hines, on whom I had performed the operation for the empyema

empyema with success. Since which time, I have performed the same operation a second time with equal benefit; and therefore presume to lay this case likewise before you, as a farther proof of its usefulness under the like circumstances.

JOHN Collier, aged 17 years, was admitted into Guy's Hospital on the 10 of May, 1753, on account of a complaint in his chest, which he had laboured under for three or four weeks. His symptoms were a continual pain in his left side, a difficulty in breathing, and an inability of lying on his right side, or of sitting upright, without greatly increasing his complaints. His pulse was quick, and low; he had a short cough, was a good deal emaciated, and appeared fallow in his complexion.

Upon examination, I perceived a small tumor, situated on the anterior part of the thorax obliquely, on the left side of the extremity of the sternum or breast-bone. There was not the least discoloration of the integuments. On pressing upon the tumor, his pain and difficulty of breathing were increased, and there appear'd something like a fluctuation under my fingers. He had never any rigor, which is a symptom generally attending the formation of matter; but from experience I have found, that the want of this symptom is no proof of the contrary,

From the foregoing circumstances, and symptoms, I made no doubt of the propriety of the operation, which I performed in the following manner:

The patient being properly situated and secured, I began with making an incision of about two inches long through the integuments, and tendinous expansion

panfion of the oblique mufcles of the abdomen upon the moft prominent part of the tumor: then I proceeded to the making a fecond incifion, of an equal length with the former, tranfverfely thro' the upper part of the *rectus* mufcle (which had a perfect healthy appearance), directing my knife forwards, betwixt the cartilaginous portions of the feventh and eighth ribs, into the cavity of the thorax; upon which a thick clotted matter, to the quantity of 23 ounces and upwards, was difcharged. After the whole of the matter was difcharged, I introduced the fore-finger of my right-hand into the cavity, with which I evidently felt the lungs quite loofe and free from adhefion, the mediastinum, and fuperior part of the diaphragm; which laft had been prefs'd fomewhat lower than its natural fituation by the weight of the incumbent matter. From whence it undoubtedly appear'd, that this great quantity of matter was contained in the cavity of the thorax.

After the whole of the matter was difcharged, I introduced a linen tent, properly fecured, into the cavity; which was continued to be introduced every day for about three weeks, now and then, as occafion required, making ufe of the prepared fponge-tent.

The difcharge of matter was confiderable for the firft week, when it began to decreafe gradually, till, at the end of three weeks, there was no difcharge at all.

From this time, fuperficial applications only were made ufe of. At the end of five weeks he was perfectly well, and has recovered his former plumpnefs, and healthy appearance.

I muft obferve to you, that, about two years ago, he received a violent blow on his left fide by a fall;

fall; for which he had little or no care taken of him. He has ever since this accident had some complaints in his side at times, but not constantly; nor have they ever been so bad, as to prevent his acting in his business as a sailor, till within a few weeks before he applied to me.

London, Hatton Garden,
June 28, 1753.

XL. Extract of a Letter from Mr. James Dodson to Mr. William Mountaine, F.R.S.

May 26, 1753.

Read July 5, 1753. **T**HE world has, without dispute, been obliged to the invention of fluxions, for many concise methods of calculating the peripheries, areas, and solidities, of curvilinear figures; but it must be confessed, at the same time, that the most useful, even of those, had been computed before, tho' by methods more laborious; and, consequently, since the truth of the principles of fluxions was long disputed, that art seems rather to have received, than to have afforded, any advantage, in those cases.

Neper and Briggs calculated their several tables of logarithms, with almost insuperable labour; and Van Ceulen was rendered famous for his approximation to the quadrature of the circle, on account of the acknowledged tediousness of its computation. The methods of computing logarithms were indeed improved, by the assistance of the properties of the Hyperbola, and

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